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BACKGROUND

The Washington State Department of Natural Resources (DNR) is the trust manager for 1.4 million acres of forested trust land in western Washington. The Legislature is the trustee and has directed DNR to serve as trust manager. This Draft Environmental Impact Statement is central to an environmental evaluation of sustainable forestry policies for these trust lands.

The overwhelming majority of the lands included in the sustainable harvest calculation are held in trusts created by federal and state laws. Although the management of these trusts provides many benefits to all the people of Washington, DNR has a clear legal duty of undivided loyalty to each separate beneficiary. Providing financial support is one of several legal trust land management responsibilities. Money goes to the beneficiaries (public schools, counties, public universities, local junior taxing districts, and others), which have received over \$4.55 billion since 1970. Natural Area Preserves and Natural Resource Conservation Areas are included in the sustainable harvest modeling process even though they are not trust assets and are not managed primarily for growing timber. They are evaluated for their habitat contribution at the landscape level because the Habitat Conservation Plan's Implementation Agreement recognizes their conservation benefit role.

There are several key outcomes of the sustainable forest modeling. They range from an understanding of the conservation benefits created by each Alternative to the anticipated levels of sustainable harvest of trees. DNR uses a sophisticated computer model to evaluate how various policy alternatives change the landscapes. The model uses high quality trust land forest inventory and some thirty "layers" of geographical information system data to understand possible landscape level changes. Simply put, the model helps the public and the decision-maker, Washington Board of Natural Resources (the Board), understand what happens, where it happens on the landscape, and show how it would change over time.

Purpose and Need

This proposal is to evaluate options for long-term sustainable forest management and to recalculate a sustainable harvest level for western Washington forested state trust lands. This is necessary because state law requires DNR to periodically adjust the acreages designated for inclusion in the sustained yield management program and calculate a sustainable harvest level.

Specifically, the purposes of the re-calculation proposal are:

1. To incorporate new information into a new model to recalculate the decadal sustainable timber harvest level (for western Washington) under current DNR policy and federal and state laws.



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2. To permit the Board to evaluate any policy changes after a number of policy alternatives have been modeled and analyzed through an Environmental Impact Statement.

Environmental Impact Statement Process

The sustainable forestry calculation is a “non-project action” under the State Environmental Policy Act. Non-project actions include the adoption of plans, policies, programs, or regulations that contain standards for controlling the use of the environment or regulating future actions. Site-specific analyses under guidance of the State Environmental Policy Act will occur for “projects” such as thinning, road construction, or other forest management activities that constitute a governmental action subject to the Act.

This Act creates an open process to gather public input about governmental actions (e.g., sustainable forestry) before final decisions are made. The information gathering process started with public scoping meetings held early in 2002 and continues today in various forums. To date, over two thousand comments have been received from the public, many of which have been integrated into the six Alternatives under consideration.

The Board of Natural Resources has not yet selected a Preferred Alternative; the objective of this approach is to allow the State Environmental Policy Act and the public involvement processes to provide additional information prior to selecting a Preferred Alternative. These processes include public meetings and an extension of the formal comment period beyond the legally required minimum, as well as workshops with the Board. The workshops are designed to help the Board and the public understand the Draft Environmental Impact Statement and the possible next steps.

Following the close of the comment period and the Board workshops, the Preferred Alternative will be selected and analyzed in a Final Environmental Impact Statement. The Preferred Alternative may be one of the current Draft Environmental Impact Statement Alternatives or the Board may take various features of the Alternatives and “mix and match” them. The Board will likely identify their preferred option using the following information:

- Public comments on the Draft Environmental Impact Statement;
- Analyses in the Final Environmental Impact Statement;
- Additional analyses (for example, a financial analysis) provided by DNR staff at the Board’s request; and
- Public comments offered at regular monthly meetings.

Ultimately, the Preferred Alternative will become the clear delineation of sustainable forestry for 1.4 million acres of trust land in western Washington.

ENVIRONMENTAL IMPACT STATEMENT ALTERNATIVES

At the January 2002 Board of Natural Resources’ meeting, prior to the release of the Determination of Significance and Public Scoping Notice according to the State

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Environmental Policy Act, the Board set the sideboards for the evaluation of policy alternatives. The Board specified that alternatives and components of alternatives were to meet the Department's legal and policy mandates (including federal and state laws), the Trust Mandate, and the objectives of the Habitat Conservation Plan. Alternatives that did not meet one or more of these objectives, or the purpose and need of the proposal, were not evaluated. These sideboards are consistent with the requirements of the State Environmental Policy Act.

In this Draft Environmental Impact Statement, six Alternatives are examined for the management of 1.4 million acres of trust land in western Washington. As required by the State Environmental Policy Act, the Alternatives are examined using reasonably available information to assess their potential significant adverse environmental impacts.

As directed by the Legislature in accordance with the State Environmental Policy Act, Revised Code of Washington 43.21C.020(1)(c), one of the key outcomes of governmental actions is to "fulfill the social, economic, and other requirements of present and future generations of Washington citizens." As acknowledged by the Legislature and others, sustainability requires meeting social, economic, and ecological considerations today without foreclosing options for generations to come.

The following six Alternatives represent sustainable forest management in various forms. Each Alternative provides a different mix of benefits and impacts while still meeting the Board's specified sideboards.

Alternative 1 – No Action (Current Operations)

Alternative 1 represents the Board's existing policies and DNR's forest management strategies as indicated by the DNR Forest Resource Plan, 1997 Habitat Conservation Plan, DNR procedures and tasks, current DNR operations, and all current federal and state statutes. This Alternative represents an estimate of continued management of state trust forestlands with current management strategies. Under this Alternative, projecting the status quo into the future represents uncertainties, such as how DNR would manage riparian areas or marbled murrelet habitat in the future. Therefore, in the case of riparian areas and marbled murrelet habitat, current strategies of deferral are projected indefinitely.

Alternative 2 – Habitat Conservation Plan Intent

Alternative 2 represents existing Board-approved policies and forest management strategies as defined by the DNR Forest Resource Plan, 1997 Habitat Conservation Plan, and current federal and state statutes. It does not include those current DNR procedures and tasks that were not approved by the Board. Management under this Alternative would implement the Habitat Conservation Plan as originally negotiated with the Federal Services in 1997.



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Alternative 3 – Combined Ownerships

Alternative 3 represents existing Board-approved policies (except Policy No. 6 on Trust Ownership Groups), forest management strategies defined in the DNR Forest Resource Plan, the 1997 Habitat Conservation Plan, and current federal and state statutes.

“Combined Ownerships” refers to a change in Forest Resource Plan Policy No. 6 that defines how to group the trusts’ lands when applying the even-flow requirement in Policy No. 4.

Alternative 4 – Passive Management Approach

Alternative 4 represents managing state trust forests in western Washington with passive management approaches to provide increased conservation and habitat protection while producing revenue. This approach maintains the 1997 Habitat Conservation Plan objectives, the DNR Forest Resource Plan, and current federal and state statutes. “Passive management” refers to a land management approach that allows forest growth and structural development processes to occur with little silvicultural (cultivation of forest species and stand care) activity.

Alternative 5 – Intensive Management Approach

Alternative 5 represents managing state trust forests in western Washington with emphasis on revenue production on lands that are not dedicated to habitat conservation. It maintains 1997 Habitat Conservation Plan objectives and strategies, Forest Resource Plan (with exception of proposed changes) guidelines, and meets current federal and state statutes. “Intensive or active management” refers to a land management approach that accelerates forest growth and structural development processes through greater use of silvicultural activities.

Alternative 6 – Innovative Silvicultural Management

Alternative 6 represents managing state trust forests in western Washington using “innovative silvicultural management” techniques to generate both increased conservation benefits and revenue for the trusts. This approach attempts to integrate habitat and revenue generation objectives while maintaining the current Habitat Conservation Plan approach, adhering to the Forest Resource Plan policies, and meeting current federal and state statutes. Alternative 6 is based on increased silvicultural activity designed to accelerate forest growth and structural development processes.

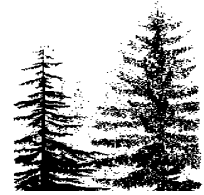
Features that Vary Among Reasonable Alternatives

The six Alternatives feature changes to policies, procedures, and implementation strategies, which are summarized below.

Ownership Groups

Currently there are 24 ownership groups. This current organization is retained in Alternatives 1 (No Action), 2, and 4. Two variations of current policy are proposed in Alternatives 3, 5 and 6. In Alternative 3, all westside trust forestlands are placed into one

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ownership group. In Alternatives 5 and 6 the Federal Grant lands and Forest Board Purchase lands (currently five ownership groups) are placed into one ownership group. This reduces the overall number of groups from the current 24 to 20. The change to ownership groups proposed in Alternatives 3, 5, and 6 would require a change to Forest Resource Plan Policy No. 6.

Timber Harvest Levels

Sustainable harvest can be regulated by several means, including volume, acreage, and economic value. Current Board of Natural Resources policy uses timber volume. Alternatives 1 through 4 incorporate current policy, regulating harvest by volume. Alternatives 5 and 6 regulate harvest by economic value, requiring a change to Forest Resource Plan Policy No. 5. Projected harvest levels for the first decade (2004-2013) are presented in Table ES-1.

Table ES-1. Summary of Projected Harvest Levels in Millions of Board Feet Per Year for First Decade (2004-2013) by State Trust, by Alternative

Trusts	Sustainable Forest Management Alternatives					
	1	2	3	4	5	6
	First Decade Values in Millions of Board Feet per Year					
Agricultural School	9	9	7	12	12	13
Capitol Grant	34	37	46	29	74	59
Charitable/Educational/Penal and Reformatory Institution	15	15	17	12	20	26
Community College Forest Reserve	2	1	0	1	1	1
Common School and Indemnity	114	174	179	121	267	259
Escheat	2	2	2	1	2	2
State Forest Board Purchase	32	39	61	35	48	59
State Forest Board Transfer	157	212	300	163	324	307
Normal School	6	12	11	7	14	14
Scientific School	23	22	29	25	33	32
University - Original	1	0	1	1	1	1
University - Transferred	1	13	9	4	21	8
Total	396	536	662	411	817	781

Sustainable Even-flow Timber Harvest

Timber harvest “even-flow” ensures that about the same amount of timber is available now and for future generations in perpetuity. Basically, “sustained yield” means that harvest (yield) does not exceed productivity (growth).

Alternative 1 and Alternative 4 propose no change to the current implementation of Forest Resource Plan Policy No. 4. As such, even-flow is managed as a narrow band of variation,



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allowing the harvest level to vary by as much as 25 percent above and below the long-term harvest level.

Alternative 2 proposes a “relative” non-declining even-flow approach (this is similar to how the 1996 DNR sustainable harvest calculation examined allowable cut levels by ownership group).

Alternative 3 expands the allowable variation in harvest level, controlling harvest fluctuation level as a wider band with no cessation or prolonged curtailment of harvest (formerly per RCW 79.68.030, recodified at Laws of 2003, Ch. 334, sec. 555(3)).

Alternatives 5 and 6 propose to implement the sustainable even-flow policy by revenue rather than harvest volume. The policy objective is to have timber harvest flows not vary from a previous decade more than ± 25 percent. This approach uses the flow constraint approach from the University of Washington model (Bare et al. 1997).

None of the Alternatives would require a change to Forest Resource Plan Policy No. 4 even-flow. However, Alternatives 2, 3, 5, and 6 would require a change to the “discussion” section of that policy. If the Board selected a Preferred Alternative that calculates harvest level by value—instead of volume—then Forest Resource Plan Policy No. 5, to control harvest by volume, would need to be amended accordingly.

Alternatives 2 to 6 would require revisions to DNR Procedure 14-001-010 (Determining Harvest Levels and Completing the Five-Year Action and Development Plan) and Forestry Handbook Task 14-001-020 (Developing the Draft Five-Year Action and Development Plan).

Maturity Criteria and Rotation Age: Determining the Minimum Regeneration Harvest Age

Maturity criteria determine the earliest age that a stand is considered eligible for regeneration harvest and are applied in even-aged forests. Forest Resource Plan Policy No. 11 describes how DNR determines maturity criteria. Currently, these criteria are determined by balancing the biological productivity and the economic potential of a stand of trees. In western Washington, DNR’s current average rotation age is 60 years (Forest Resource Plan Policy No. 4). To meet specific objectives such as stand diversity, the Department may cut some stands as early as 45 years and other stands only when trees reach 100 years (Forest Resource Plan Policy No. 4).

In Alternatives 1, 2, and 3, maturity criteria are determined in accordance with the existing Forest Resource Plan Policy No. 11. In Alternative 4, maturity criteria are determined with an emphasis on tree growth over economic potential. In other words, the emphasis is to harvest a stand of trees as it approaches its culmination of growth (the end of the period of rapid growth).

In Alternative 5, maturity criteria are determined with an emphasis on economic potential over tree growth potential. In this Alternative, the emphasis is on harvesting stands of trees

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when they have reached their maximum economic value, expressed as maximum net present value.

In Alternative 6, the maturity criteria are determined with an emphasis on economic potential over tree growth potential, as in Alternative 5. However, in Alternative 6, the implementation of biodiversity pathways silviculture presented by Carey et al. (1996) leads to an outcome of alternating harvest ages. For example, harvest ages on some sites may alternate between 60 and 130 years. This feature, in theory, allows for simultaneous increases in production of both habitat and income. This feature, in addition to the implementation of innovative silvicultural techniques such as repeated thinnings that create habitat structures like down logs, snags, and multi-level forest canopies, would require changes to Forest Resource Plan Policy Nos. 30 and 31.

The determination of maturity criteria for each Alternative would require changes to Forest Resource Plan Policy No. 11, the discussion in Forest Resource Plan Policy No. 4, and to DNR Procedure 14-005-020 (Identifying and Prioritizing Stands for Regeneration Harvest).

Northern Spotted Owl Habitat Management

None of the Alternatives proposes changes to the nesting, roosting, foraging and dispersal habitat strategies outlined in the Habitat Conservation Plan (page IV.3). Alternatives 2 to 6 propose changes to current operations from those defined in Alternative 1 (No Action). Management of Memo 1 owl circles remains the same for all Alternatives (1 to 6) (deferred until 2007).

In Alternative 1, nesting, roosting, foraging and dispersal management strategies are implemented as constraints, whereby if conditions are not met, management is restricted. However, habitat strategies can be implemented as targets, as originally articulated in the Habitat Conservation Plan (page IV.1-38).

In Alternative 2, a target of 50 percent desirable habitat is established for designated nesting, roosting, and foraging, or dispersal management areas within a watershed. However, unlike Alternative 1 (and Procedure 14-004-120), thinning is available as a strategy to create and maintain nesting, roosting, and foraging management area objectives. In addition, regeneration harvests and thinnings are allowed in non-habitat areas in the rest of the watershed even if the watershed currently has less than 50 percent habitat. This approach is used in Alternatives 2, 3, and 4 and would require a change to Procedure 14-004-120 (Management Activities Within Spotted Owl Nest Patches, Circles, Designated Nesting, Roosting, Foraging, and Dispersal Management Areas).

Alternatives 5 and 6 propose a variation on the strategy proposed in Alternatives 2 through 4. Northern spotted owl conservation management in Alternative 5 is similar to that in Alternatives 2 to 4, with additional heavier thinnings to accelerate the development of large-diameter trees within stands to create and maintain sub-mature nesting, roosting, foraging, and dispersal habitat. Alternative 6 takes this strategy one step further based on concepts of biodiversity pathways described by Carey et al. (1996). These types of



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thinnings would be applied in small-diameter dense stands where stand viability would not be compromised. In these stands, the average relative density can be lowered to 35. In larger diameter stands, stand densities are maintained between 45 and 70. Thinning large-diameter closed stands too heavily and opening up the canopy too much may lead to blow-down and destroy much of the existing forest structure (e.g., snags). In all cases, the silvicultural prescriptions would include treatments to create and maintain snags, coarse woody debris, and small openings, as well as areas of heavy thinnings, light thinnings, and unthinned areas. As in Alternatives 2, 3, and 4, implementation of Alternatives 5 and 6 would require a change to Procedure 14-004-120.

Old Forest Components

“Old forests,” their definition, components, extent, and management are important issues in sustainable forestry management. Old forests are defined as a forest inventory unit with old growth structure.

Alternative 1 includes all provisions for old forest management in current operations, requiring no changes to policy or procedure.

Alternatives 2 to 6 maintain two of the four basic components of current management—Old Growth Research Area deferrals as defined in Forest Resource Plan Policy No. 14, and the management for old forest conditions in the Olympic Experimental State Forest as defined in the Habitat Conservation Plan (page IV.88).

Alternatives 2 to 6 do not maintain the “50/25” strategy and would require changes to Task 14-001-010 if one of these Alternatives is adopted by the Board. In addition, Alternatives 2 to 6 replace the required legacy and reserve tree level requirements in Procedure 14-006-090 with language implementing the protection of structurally unique trees and snags described in the Habitat Conservation Plan (pages IV.156-157). Under Alternatives 2 to 6, this legacy and reserve tree procedure would change from the current procedure requiring retention of 7 percent of the trees in regeneration harvest units to the Habitat Conservation Plan strategy of retaining a minimum of 8 trees per acre.

Alternative 4 proposes to defer for the entire planning period all standing old forests with an age equal to or greater than 150 years in the 2001 forest inventory. This is an age-based criterion without structural considerations found in the Habitat Conservation Plan’s definition of old forests.

Rather than specifically preserving all forests of a certain age existing today, Alternatives 5 and 6 propose that 10 to 15 percent of each westside HCP Planning Unit be targeted as old forests based on structural characteristics.

Adoption of these features by the Board would require changing Forest Resource Plan Policy Nos. 3 and 14.

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Riparian and Wetland Areas

The riparian management zone strategies in the Alternatives are based on the riparian management activities described in the Habitat Conservation Plan (pages IV.59-62). Frequency and intensity of management within these zones vary among the Alternatives.

None of the Alternatives proposes changes to the plan's riparian management zone designations or basic guidelines for management within those zones under the Habitat Conservation Plan. No changes are proposed for wetland management zones in any of the Alternatives.

Currently, no harvest activities are conducted within designated riparian management zones, except road and yarding corridor crossings. Activities are allowed within the wetland management zones as identified in Procedure 14-004-110. These guidelines would not change under Alternatives 1 and 4, requiring no change to DNR policy or procedure.

Newly proposed riparian procedures are under negotiation with the Federal Services (at time of publication). Alternatives 2, 3, 4, 5, and 6 are consistent with the draft riparian procedures.

Alternatives 2, 3, 5, and 6 provide a range of restoration and silvicultural activities that may be allowed under the final riparian procedure. Ecosystem restoration encompasses a range of activities that must be site-specific and tailored to the physical and biological conditions at a particular site.

As defined in the Habitat Conservation Plan (page IV.62), disturbance of areas of potential slope instability within riparian areas and wetlands is minimized to light access development and maintenance (road and yarding corridors).

In Alternatives 2 and 3, restoration and silvicultural activities are allowed at a low intensity within the riparian zones. Light variable thinnings are the principal silvicultural and restoration method to maintain stands for longer rotations and to increase structural complexity. It was assumed for modeling purposes that activities in Alternatives 2 and 3 would maintain canopy closure (relative density of 45 or greater) over 90 percent of the riparian management area.

In Alternatives 5 and 6, restoration and silvicultural activities are allowed at moderate intensity within the riparian zones. Alternative 5 allows heavier commercial thinnings (see Appendix B of this Draft Environmental Impact Statement for a description of thinning types) to accelerate future large-diameter, structurally complex stands. For modeling purposes, it was assumed that activities in Alternative 5 would maintain canopy closure (relative density of 45 or greater) over 70 percent of the riparian management area.

Alternative 6 proposes a different approach from those in Alternatives 1 through 5. As in Alternative 5, Alternative 6 allows heavier thinnings in the riparian zones. Unlike the other Alternatives, biodiversity pathways management (Carey et al. 1996) is used to achieve desired structural components of a complex riparian forest stand. In these types of



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thinnings, relative density can be lowered to 35 in small-diameter dense stands. In larger diameter tall stands, relative densities are maintained between 45 and 70. Thinning large-diameter closed stands too heavily and opening up the canopy too much, may lead to blow-down and destroy much of the existing forest structure (i.e., snags and down logs). In all cases, the silvicultural prescriptions would include snag and coarse woody debris treatments, the creation of small openings, areas of heavy thinnings, light thinnings and leave areas. For modeling purposes, it was assumed that activities in Alternative 6, as in Alternative 5, would maintain canopy closure (relative density of 35 or greater) over 70 percent of the riparian management area.

Summary of Environmental Consequences

This section summarizes the environmental analysis detailed in Chapter 4 of the Environmental Impact Statement, which examines the effects of proposed changes to the current policy and procedures, under each Alternative. The analysis uses modeling outputs to inform the public and decision-makers of the relative differences in potential environmental impacts. This analysis also allows DNR to assess relative risks that are illustrated using modeling outputs.

Potential relative risks are identified and discussed for the resource areas and are used to rank the Alternatives. The potential relative risks and rankings express the potential for a negative environmental impact to occur and/or indicate if an Alternative may fail to meet all of its projected outcomes.

None of the Alternatives would result in any probable significant adverse impacts to any of the resource areas, relative to current conditions, beyond those anticipated in the Habitat Conservation Plan. A relatively high risk does not necessarily equate to a probable significant adverse impact when compared to another Alternative or to existing conditions.

Forest Structure

Alternatives 1 and 4 would provide more old forest and would entail less risk of adversely affecting threatened, endangered, and sensitive plants than the other Alternatives. However, Alternatives 1 and 4 would result in more dense forest stands that achieve lower tree growth rates and are more susceptible to damage from insects and disease. They rely on more passive management and would require less investment for forest management. Alternatives 2 and 3 are ranked intermediate on all factors and would also require an intermediate level of investment needed for successfully implementing the management strategies associated with these Alternatives and achieving the projected level of harvest.

Alternatives 5 and 6 would have fewer restrictions on areas available for stand management and timber harvest and would apply more intensive management strategies than the other Alternatives. Management proposed under Alternatives 5 and 6 would result in higher rates of tree growth, forests that are less susceptible to insect and disease damage, and higher levels of long-term carbon storage. Alternative 6 also ranks relatively high for maintaining stands with old forest characteristics. Alternatives 5 and 6 would entail more risk of adversely affecting

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threatened, endangered, and sensitive plants due to more harvest and harvest-related disturbance.

Indirect impacts on other resources, such as riparian resources, fish, and wildlife, are the result of different forest management strategies. These differing forest management strategies change the harvest intensity and harvest type. These impacts are summarized in each of the resource discussions below.

Riparian

The proposed different management strategies in riparian areas do not result in any probable significant adverse impacts in terms of development of future forest structures in the riparian zone relative to existing conditions and beyond those anticipated in the Habitat Conservation Plan environmental analysis. However, the level of management activity, such as silvicultural activities, in the different Alternatives could result in variable impacts. Such impacts, both beneficial and negative, vary when analyzed in the short term versus the long term. Alternative 6 is projected to develop more “functional” forest area in riparian areas; however, these projections are the outcome of an active management program of thinnings, snags, and down woody debris treatments.

Each of the Alternatives proposes different amounts of harvest activities in the riparian land class (Appendix D). The estimated average activity level of Alternative 5 is 13 percent per decade; Alternative 3 is 8 percent per decade; Alternative 2 is 7 percent per decade; Alternative 4 is 5 percent per decade; and Alternative 1 is 3 percent per decade.

The average estimated level of activity under Alternative 6, 35 percent per decade, represent substantially higher levels than the other Alternatives, although the majority of the harvest area in Alternative 6 is low volume removal harvests. Alternative 6 model results show a high level of activity within the riparian areas. It appears likely that the modeling outputs for Alternative 6 over-estimates the amount of allowable activity in the riparian areas. Upon examination, the problem is not with the fundamental policy direction in Alternative 6, but rather the outcome of initial modeling assumptions. Additional modeling will be completed for the Final Environmental Impact Statement.

Wildlife

Alternatives are consistent with the Habitat Conservation Plan. Environmental effects anticipated under all Alternatives relative to current conditions would be within the level of impacts anticipated to wildlife species and analyzed in the Habitat Conservation Plan Environmental Impact Statement (DNR 1996). Changes under some Alternatives in procedures that address the management of northern spotted owl habitat would be consistent with the goals and objectives of the Habitat Conservation Plan.



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Other policy and procedure changes under the Alternatives would influence the amount and distribution of wildlife habitat on DNR westside trust lands. The Alternatives would vary in the timing and amount of forest structures they would create, but would not be expected to have any significant adverse environmental effects on wildlife. In the short term and long term, the amount of structurally complex forest is modeled as increasing in all planning units under all Alternatives. Structurally complex forest cannot, however, be used as a measure of DNR's success in meeting its obligations under the Habitat Conservation Plan. Instead, structurally complex forests serve as a relative indicator of change in the amount of habitats of management concern.

Air Quality

None of the proposed Alternatives would create new policies or procedures related to air quality. Impacts related to air quality would result from the projected forest management activities associated with each of the Alternatives.

The Alternatives differ slightly in their effects to air quality, but none of the Alternatives has the potential for significant environmental impacts relative to current conditions, beyond those anticipated in the Habitat Conservation Plan Environmental Impact Statement. Air pollution from dust would be mitigated by dust abatement measures under all Alternatives, and the total amount of prescribed burning would likely continue to be below the level anticipated in the Habitat Conservation Plan.

Geomorphology, Soils, and Sediment

Significant increases in landslide frequency or severity and loss of soil productivity relative to current conditions, beyond those anticipated in the Habitat Conservation Plan Environmental Impact Statement, are not anticipated under any of the Alternatives. Increased soil erosion may occur in certain intensely managed areas as road use increases. Further discussion of relative impacts among the planning units and for individual watersheds is included in Cumulative Effects (Section 4.15). Alternative 6 carries the highest potential overall relative impact, followed by Alternatives 5, 3, 2, 4, and 1.

Hydrology

None of the Alternatives would be expected to increase peak flows significantly. No changes to Procedure 14-004-060 are proposed; therefore, there would be no significant adverse environmental impacts relative to current conditions, beyond those anticipated in the Habitat Conservation Plan Environmental Impact Statement.

Water Quality

The proposed different management strategies would not result in any probable significant adverse impacts relative to current conditions, beyond those anticipated in the Habitat Conservation Plan Environmental Impact Statement. None of the Alternatives would increase the risk of water quality degradation in the long term.

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Existing procedures adequately protect water resources. Short-term, localized sedimentation may increase in some areas immediately following harvest, but the vegetation in the inner and the no harvest portions of the Riparian Management Zones would prevent most sediment from entering streams. Over the long term, improved riparian function would lead to improved water quality on DNR-managed westside trust lands.

Wetlands

DNR Forest Resource Plan Policy No. 21 states, “the Department will allow no overall net loss of naturally occurring wetland acreage and function.” The supporting procedure governs harvest activities in and around wetlands and is not proposed to change under the Alternatives.

The approximate delineation method, an approved approach to determine wetland boundaries, primarily uses maps and aerial photographs. However, not all wetlands, particularly forested wetlands, are visible on aerial photographs. Also, the Habitat Conservation Plan and its Environmental Impact Statement acknowledges that wetlands less than 0.25 acre may be affected by forest management activities.

The higher level of harvest in Alternatives 5 and 6 would increase the relative potential risk to wetlands, but no Alternative has the potential for significant adverse environmental impacts relative to current conditions, beyond those anticipated in the Habitat Conservation Plan Environmental Impact Statement.

Fish

The potential for adverse effects of the proposed Alternatives to fish would not be expected to result in any probable significant impacts relative to current conditions, beyond those anticipated in the Habitat Conservation Plan environmental analysis. Over the long term, all Alternatives would be expected to result in improved riparian and aquatic conditions for fish. In part, this is the result of current degraded conditions in many areas that resulted from practices prior to adoption of the Habitat Conservation Plan.

The potential for adverse effects to fish resources from Alternatives 1 through 4 is expected to be minimal during the first decade in all planning units. In contrast, harvest activities in the riparian zone are expected to be at higher levels under Alternative 5 in the Olympic Experimental State Forest and under Alternative 6 in all planning units, largely in the form of more frequent thinning activities. In particular, the estimated levels of activity under Alternative 6, which would be 35 percent per decade, represent substantially higher levels than the other Alternatives, although the majority of the harvest area in Alternative 6 is low-volume removal harvests. It appears likely that the modeling outputs for Alternative 6 over-estimate the amount of allowable activity in the riparian areas. Additional modeling will be completed for the Final Environmental Impact Statement.



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Public Utilities and Services

The Alternatives present a wide array of direct economic benefits to the beneficiaries. Potential effects on transportation infrastructure would vary by Alternative, with larger projected harvest volumes resulting in increased logging truck traffic. None of the Alternatives is expected to result in any probable significant adverse environmental impacts relative to current conditions, beyond those anticipated in the Habitat Conservation Plan Environmental Impact Statement. These impacts are in the setting of the total forest management activity within the state of Washington and surrounding regions; current DNR harvests are about 13 percent of total western Washington harvest. Logging companies harvesting timber from forested state trust lands must meet Washington State Department of Transportation weight requirements and DNR regularly meets with local government officials and engineers to discuss the effects of logging-related traffic (DNR 1992). These measures would help mitigate potential impacts associated with increased road traffic.

Cultural Resources

While there are relative differences among the Alternatives, none is expected to result in any probable significant adverse environmental impacts to cultural resources relative to current conditions, beyond the effects anticipated in the Habitat Conservation Plan Environmental Impact Statement. Forest Resource Plan Policy No. 24 requires protection of such resources and DNR is committed to consulting with Native American tribes and other interested parties about areas of cultural importance to them. These two forms of mitigation are expected to minimize risk to cultural resources.

Recreation

Environmental impacts on recreation resources are assessed in relation to harvest level. More intensive harvest would have a larger impact on the landscape, potentially affecting the quality of recreation experiences in adjacent and nearby areas. None of the Alternatives is expected to result in any probable significant adverse environmental impacts relative to current conditions. Potential effects on recreation may be mitigated on a case-by-case basis during operational planning prior to the initiation of harvest activities. Potential effects may be mitigated by employing harvest systems that minimize potential visual effects and by relocating or rerouting affected recreation facilities, particularly trails, as appropriate. All of the Alternatives would meet the minimum requirements of DNR policies and procedures that address recreation and public access (Policy Nos. 25 and 29).

The effects of the proposed Alternatives on fish and wildlife could, in turn, affect recreational fishing and hunting on DNR westside trust lands. Fishing and hunting opportunities on DNR westside trust lands could be positively affected to the extent that improvements in habitat and habitat suitability contribute to greater numbers of fish and game populations in some or all of the planning units. The

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potential effects on fish and wildlife are discussed in more detail in Sections 4.10 and 4.3, respectively.

Scenic Resources

None of the Alternatives is expected to result in any probable significant adverse environmental impacts relative to current conditions. Lands managed for timber production under all Alternatives would be managed under DNR's visual management procedure (14-004-080), which seeks to minimize potential impacts to scenic resources by managing harvest activities with respect to sensitive viewshed areas. Potential visual effects associated with the proposed Alternatives may be mitigated on a case-by-case basis during operational planning prior to the initiation of harvest activities. Operational planning by the Department includes policies and procedures related to green-up (growing young trees for a specific time before adjacent trees may be cut), reforestation, and harvest unit size that contribute to the management of forested landscapes.

Cumulative Effects

Landscapes in western Washington are characterized by a particular distribution of forest structures. The distribution of forest structures over time and space appears to be the basis of cumulative effects in the forest environment. It is generally recognized that very large and structurally complex forests are currently scarce and medium-sized closed forests are overabundant across all ownerships in western Washington. Therefore, forest management activities that create a greater balance in forest structure at the landscape level would be expected to reduce cumulative effects.

All Alternatives are modeled as resulting in increases in structurally complex forest over time. However, the rates of change and amount of change vary among the Alternatives. All Alternatives project changes in forest structure that should change the current distribution of structural classes towards more complex forests. All Alternatives create a new balance of forest structure at the landscape level. This new balance suggests that there is little potential for contributing to adverse cumulative effects.

Modeled changes in the percent distribution of forest structure classes on DNR-managed westside state trust lands are presented in Figures ES-1, ES-2, and ES-3. Forest structure is represented as stand development stages, which are defined in Appendix B, Section B.2.1.2 of this Environmental Impact Statement.



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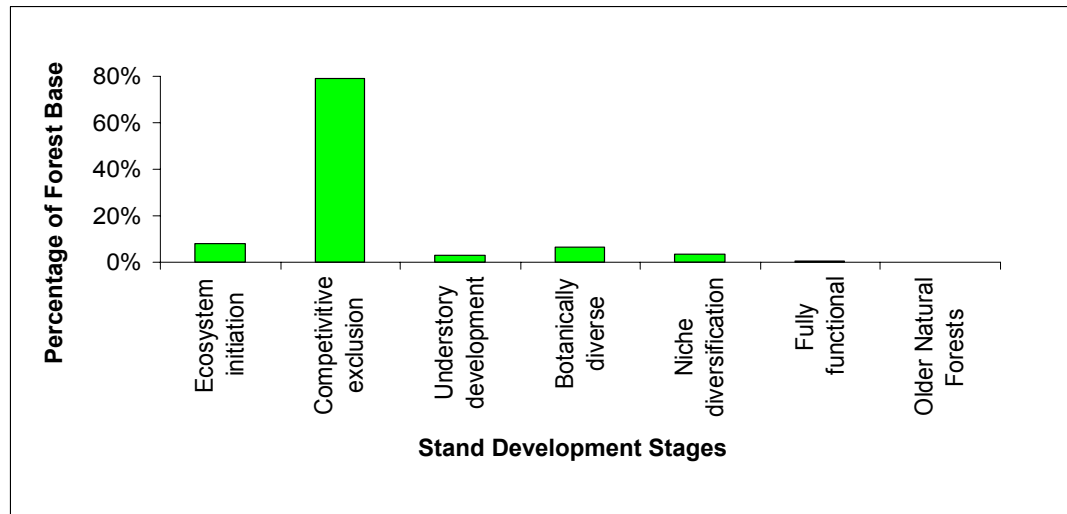


Figure ES-1. Modeled Proportion of State Trust Lands Forest in Each Stand Development Stage in 2004

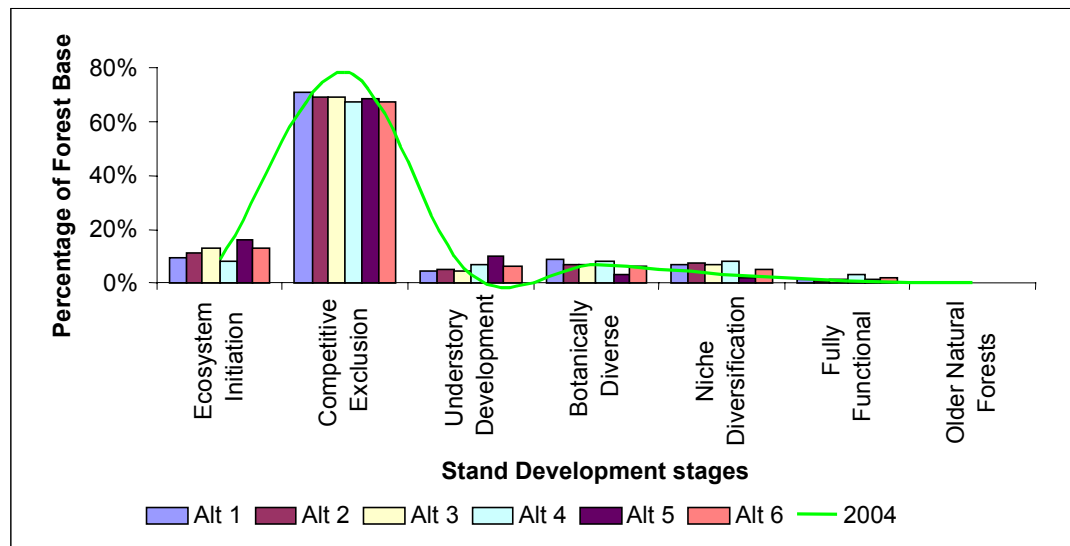


Figure ES-2. Modeled Proportion of State Trust Lands Forest Stand Development in Each Stage in 2013

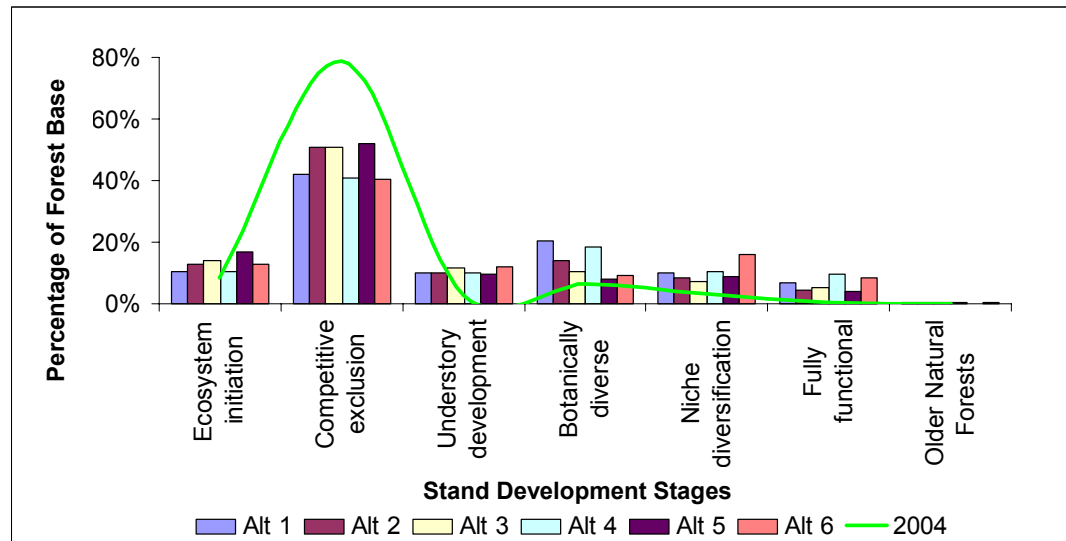


Figure ES-3. Modeled Proportion of State Trust Lands Forest Stand Development in Each Stage in 2067

ANALYSIS OF THE ALTERNATIVES

The fundamental premise of the analyses in this Draft Environmental Impact Statement is that the nature of the forest provides indications of the reasonable likelihood of environmental impacts. Understanding the dynamic nature of forest structure (number of trees, age, horizontal spacing, vertical arrangement of the tree's live foliage, etc.) is basic to most of the analyses. The understanding of forest structure and its interaction with other ecological processes allows us to conceptualize and understand the relative merits of the Alternatives.

The computer model (OPTIONS), which specifically analyzes forestland management impacts and harvest levels associated with each Alternative, is run for a 200-year planning horizon. The results in this document are shown through 2067, the nominal end date of the Habitat Conservation Plan. Because this is a non-project action, the results are displayed in relative terms; absolute analyses are only possible on project actions. Relative ranking allows the public and the Board, the decision-maker, to better understand how the mix of policy features in each Alternative is classified.

The model outputs are not "blueprints" that precisely define policy. The model uses certain identified assumptions that permit some simplifications of how the thirty layers of geographical information system data interact within the model. The model outputs should be taken together; isolation of one output ignores the collective benefits or impacts of how the policies work together.



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The purpose of the model outputs is to inform; the outputs do not become objectives nor can they precisely define the policy being simulated. The model outputs, while based on the best reasonably available information, are a simulation, and would be ground-truthed before being implemented. This is demonstrated clearly with Alternative 6. Alternative 6 model results show a high level of activity within the riparian areas. It appears likely that the modeling outputs for Alternative 6 overestimate the amount of allowable activity in the riparian areas. Upon examination, the problem is not with the fundamental policy direction in Alternative 6, but rather the outcome of initial modeling assumptions. Additional modeling will be completed for the Final Environmental Impact Statement.

Relative Effects of the Alternatives

Table ES-2 provides high-level summaries of the Alternatives. This table provides summarized information to assist the public and the decision-maker, the Washington Board of Natural Resources, in developing the Preferred Alternative. Table ES-2 examines the Alternatives from 18 different factors. The factors are identified on the left side of Table ES-2; they range from forest structure, forest health, and trust revenues to scenic resources. Given the non-project nature and the general absence of absolute threshold values, the Alternatives are placed into one of three groups for each factor; that is, the lower, intermediate and higher groups.

Sustainable forestry has social, economic, and ecological components. Table ES-2 shows how the Alternatives relatively address these features. For some of the factors, the Alternatives have very little variability. For instance, air quality has very little difference among Alternatives unlike trust revenues, which is significantly different among Alternatives. While some Alternatives may have higher relative risks of impacts than others, none of the Alternatives is expected to cause significant adverse environmental impacts relative to existing conditions.

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Table ES-2. Summary of Alternatives

	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6
Forest Structure						
Old Growth						
Forest Health						
Capturing Greenhouse Gases						
T&E and Sensitive Plants						
Riparian Resources						
Spotted Owl Habitat						
Deer and Elk Habitat						
Air Quality						
Geomorphology, Soils, and Sediment						
Water Quality						
Fish Resources						
Wetlands						
Trust Revenues (2004 to 2013)						
County Revenues (2004 to 2013)						
Cultural Resources						
Recreation						
Scenic Resources						

Alternatives have been placed into three groups:

	Lower group
	Intermediate group
	Higher group

ANTICIPATED KEY EVENTS AND DATES

Understanding this environmental analysis process and being given the opportunity to participate is important. The following are useful dates:

- **Public Draft Environmental Impact Statement Workshops:** To be held from 6:00 to 8:00 pm in Lacey (December 2, 2003), Port Angeles (December 3, 2003), Mount Vernon (December 4, 2003), Vancouver (December 9, 2003), Aberdeen (December 10, 2003), and Des Moines (December 11, 2003)
- **Special Board of Natural Resources Sustainable Forestry Workshops:** December 2, 2003 and February 3, 2004 during regularly scheduled Board of Natural Resources Meetings.
- **Regularly Scheduled Board of Natural Resources Meetings:** All regular meetings will allow for public comments. Meetings are generally held on the first Tuesday of each month. For a detailed schedule, please access:
http://dnr.wa.gov/base/boardscouncils/agenda_minutes/2004bnrmtgdates.html



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- **Formal Draft Environmental Impact Statement Commenting Period:** Comments may be e-mailed to SEPAcenter@wadnr.gov or mailed to:

DNR SEPA Center
P.O. Box 47015
Olympia, WA 98504-7015

Commenting period closes at 5:00 pm on December 19, 2003.

- **Final Environmental Impact Statement:** Projected release date is May 21, 2004.